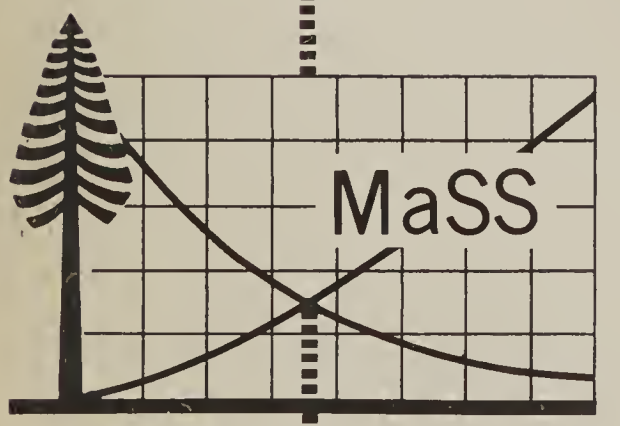
Choosing an Optimal Fleet Equipment Rate Structure: an analysis of alternatives

by Malcolm W. Kirby



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CHOOSING AN OPTIMAL FLEET EQUIPMENT RATE STRUCTURE: AN ANALYSIS OF ALTERNATIVES

INTRODUCTION

Background: Intent of Congress

Congress established the authority for a revolving fund called the Working Capital Fund (WCF) under Section 13 of the Department of Agriculture Organic Act of 1956. This fund finances the operation, maintenance and replacement of fleet equipment, vehicles, aircraft, and supplies. It is also used for other purposes such as for operating tree nurseries. The fleet includes more than 13,000 items such as autos, trucks, earth moving equipment, compressors, welders, concrete mixers and power tools. Not all such equipment is considered part of the WCF fleet -- equipment acquired for temporary use without the intention of its being replaced is designated "project" equipment and is excluded. In the Act, Congress asserted that the WCF was to be reimbursed in accordance with benefits received by users of the equipment. The official Forest Service interpretation of "benefits" means reimbursement according to actual use -- miles for transportation equipment, hours for other equipment. (Recent departures from this in some regions have not been officially sanctioned.)

Using any reimbursement scheme is likely to pose problems; the present use rate is no exception. However, before exchanging it for another, it is prudent to examine advantages and disadvantages of

alternative schemes. Accordingly, the Chief's office requested the Management Sciences Staff to develop and analyse appropriate alternatives to the present scheme in order to provide a basis for considering a change.

Effects on Managerial Decisions of Present Reimbursement Scheme

We assume that vehicles assigned to a unit must be used (or not) when and where the unit manager specifies, i.e. that field decisions are left to his discretion. Therefore, he should adopt a strategy so that the overall results from employing men, materials, and equipment are optimal even though productivity of some subsidiary activity suffers. We cannot expect him to employ equipment to best advantage if doing so means wasting manpower or spending money which he feels could be spent better elsewhere in accomplishing his overall objectives.

This is to say, he operates under an incentive scheme and his objective is maximum accomplishment of a "mix" of activities including construction and maintenance of facilities, protection of lands, satisfying on-the-ground needs of the public and reporting results. His total funds are fixed, and he tries to allocate money among activities to obtain the best overall results, i.e. to maximize the sum of accomplishments of a mixture of kinds of work. He is not expected to sacrifice his objectives by being concerned with the effects of his decisions on other Forest Service programs -- this is the concern of his superiors who designed the framework of the overall system. Conflicts of interest arise when he makes a decision which enhances the attainment of his objectives but adversely affects the interests of

the larger management unit and, hence, increases overall cost to the Forest Service. When this happens, procedures should be revised so that decisions which follow the best interests of the government also turn out to be to his advantage.

What has this to do with use rates? Simply this: under the present straight use rates, many operating and planning situations arise in which the manager in the field must make a choice not entirely in the Government's interest in order to maximize his overall objectives. This is because his costs are not the same as the Government's costs. Following are some illustrations drawn from current practices:

- If using owned equipment incurs use charges higher than for contracting the entire job, the field manager's decision may be to contract the work. He may argue that his decision results in but a slight contribution to future use rate increases (due to having less equipment to share region-wide fixed costs); but, a series of similar decisions initiates the phenomenon known as "spiraling use rates." (In Region 5, the "transporter" rate climbed to $2.10 per mile in 1963).
- Presently fire equipment is often idle with consequent high use rates. During days of "low fire-danger rating" men at guard stations can be gainfully employed on nearby campgrounds. Often this can be done only by transporting them on the fire truck. This is a secondary, not a "primary" use, and since the use rate is the same for fire as for non-fire use (as high as $.66 per mile), the district pays dearly for such transportation

using money better spent elsewhere when short of funds. The result? Crews are sometimes kept idle. However, taxpayers point out that these men ought to be gainfully employed because their salary is a fixed cost. If the district paid only the actual cost to operate the truck (over and above the costs of letting it sit idle) rather than paying mileage on a straight use basis, this problem would be reduced considerably.

- Suppose a Forest Supervisor finds low usage typical in his Region for a given class of equipment (with a high use rate). Suppose, also, that his application is high use -- then for him the cost to own might exceed the cost to rent equipment when, in fact, the actual cost to the Government for his owning the equipment is less than for renting. In the face of such an analysis he would be foolish to buy and, again, the taxpayer loses.
- When a Forest has access to rental equipment (e.g. GSA) available at low mileage rates, it may adopt the strategy of renting in preference to owning resulting in less cost to itself. But, also, it will ultimately result in higher Regional use rates because there will be less equipment over which to spread fixed costs (management, overhead and other fixed costs).
- Similarly, once equipment has been rented commercially, or through GSA (e.g. during the busy season) if its mileage charge is less than for similar owned equipment, the Forest can lower its costs by operating the rented equipment more intensively

than the owned. An example of this occurs when two persons work in the field almost every day of the week during the busy season and each requires a separate vehicle for his own use. One person incurs high use because his work site is remote, while the other incurs low usage. A field management decision assigning the rented vehicle to the man who travels the most will reduce that Forest's costs -- it also tends to drive region-wide WCF rates higher.

If GSA continues to acquire ownership of Forest Service equipment, there will be fewer pieces of equipment sharing the burden of overhead, management and other fixed costs which means use rates will climb creating additional pressure on field managers to continue making adverse decisions such as these we have discussed.

With widely different usage among forests, a uniform region-wide use rate penalizes intensive users of equipment -- a practice which departs from the original intent of charging in accordance with benefits received. Why use regional rates? First, they help stabilize annual costs. As equipment gets older, major repairs are more likely to be needed causing actual repair costs to change from year to year for each district. However, region-wide age patterns are fairly steady because changes in forest costs tend to cancel one another. (A nation-wide average would be even more steady!) This is significant because it is easier to plan if rates are stable year by year, and one way of stabilizing them is to use a region-wide average. An alternative is use individual Forest rates and set aside money annually

(say in an individual Forest account) for future years when large sums will be needed to overhaul equipment. We do this now to accumulate "depreciation" funds for replacing equipment -- adopting it for maintenance costs would permit us to use individual Forest rates.

No matter what reimbursement method is used, a region-wide average rate means that some users will benefit at the expense of others, perpetuating some of the adverse managerial decisions previously discussed; however, some reimbursement methods go a long way toward a remedy as we will see later.

SCOPE

This study analyses several alternative revolving fund reimbursement methods using criteria for judging the performance of each alternative. We will discuss, analyse and draw conclusions, but not make recommendations because the criteria are not all-inclusive -- the costs of administering each system are not included.

Criteria for Judging Alternatives

The criteria we have adopted are as follows:

- Reimburse according to benefits received from the availability or use of equipment, whichever most appropriately measures benefits.
- Field management decisions should coincide with the best interest of the Government -- to minimize total costs.
- Rate should encourage optimal management decisions to acquire, use or replace equipment.
- Minimize errors in forecasting of usage and costs.
- Rate should not discriminate in favor of either low or high intensity equipment users.
- The methods for pro-rating charges among users should be convenient.
- Rate should provide the widest range of control over usage -- from maximum stimulus to maximum suppression.

Assumptions

1) The fundamental legal entity is the National Forest; and the first level of responsibility for activity accomplishment rests with

the district ranger who is the "professional land manager of his district." As such, he is ". . . responsible for executing plans . . . for protecting, developing and utilizing resources . . . for constructing and maintaining the physical plant on his district except as specifically restricted by the Forest Supervisor." (cf. FSM 1233.6)

2) There are suitable interpretations to the term "benefits" other than the one currently used -- miles/hours is not the only useful interpretation.

3) About one-half of the fleet is operated at Forest, Regional, Research, and State and Private Forestry units.

ALTERNATIVE RATES

Types of Alternate Rates: a description

1. Charge per unit time. (Time Rate)

   User pays a fixed annual charge (collected periodically e.g. daily or monthly). The charge is independent of whether equipment is operating.

2. Charge per unit of operation. (Use Rate)

   User pays a charge per hour or per mile. The charge is independent of duration of assignment, including "standby". (see 5. below)

3. "Minimum" charges.

   User pays the larger of two charges: either a fixed charge (e.g. monthly) or charge per mile. The charge may or may not depend on (1) whether equipment is operating and (2) duration of assignment.

4. Charge per unit time plus charge per unit of operation. (Time plus Use Rate)

   User pays a fixed monthly, quarterly or annual charge (as above) and a charge per mile (as above). The charge depends on both (1) whether equipment is operating and (2) the duration of assignment.

5. Dual charges.

   a) Primary-secondary uses. User pays a higher charge when equipment is employed on tasks for which it was primarily purchased. User pays lower charge for other (secondary) employment.

b) Surcharge on rented equipment. User pays a charge for renting equipment to reimburse WCF for those management and overhead expenses which are part of the system and, thus, are independent of who owns the vehicles.

c) Standby. This is a primary-secondary type of dual charge. User pays a time rate only when equipment is "held-in-readiness;" otherwise, user pays a use rate as listed above. When equipment is idle, no charge is made (in contrast to a Time Plus Use Rate under which a time charge is paid during idle periods).

Measures of Benefits

Each category of appropriations should bear its "fair" share of equipment costs -- "fair" share means in proportion to the benefits received from having equipment available as well as from gainfully employing it.

One way of measuring benefits is by the length of time equipment is assigned to a task during which it cannot be used for another task. Another way is by the length of time or of miles during which it is actually operating (e.g. the engine running). Another way is by comparing the efficiency of its use on one task compared with others by considering the "primary" use for which its acquisition was justified. Each method is now discussed in detail as follows:

1. Benefits Incurred During Assignment

When equipment is idle, assigned to "standby," it is

prevented from performing productive work causing managers to postpone project completions, contract or rent other equipment -- all incur costs because the equipment is not available for use. The benefit is "immediate availability."

Also, during idle periods ("standby" or otherwise), overhead and management activities continue as does obsolescence, all of which incur costs. Therefore, it should be apparent that idleness does not mean that no benefits are being received nor that costs are not being incurred. It seems natural that a charge per unit time accomplishes two things: first, it accounts for benefits from having equipment assigned whether or not it is used; and second, it recovers costs which are independent of usage. (When operating under some form of charge per unit time, managers are more likely to regard idle equipment with a very critical view, and raise questions of whether it is, in fact, economical to own it.)

2. <u>During Operation</u>

To operate equipment consumes fuel, produces wear and tear requiring repair work and runs the risk of losses due to accidents -- mostly resulting in costs which are approximately proportional to miles or hours of operation.

The natural reimbursement scheme here is a charge per mile or per hour, i.e. a Use Rate to recover <u>variable</u> costs which result from operating the equipment.

3. Primary vs. Secondary Benefits

Consider a fire pumper truck -- its primary use is to suppress fires. A secondary use is transporting crews to work sites, such as campgrounds. Another secondary use is preventing the spread of fire during a controlled-burn (reforestation) activity.

Another example: consider acquiring a dump truck. Suppose a 3 cubic yard capacity would suffice for most uses, but a specific type of project requires a 5 cubic yard capacity. The first use can be considered "primary," the latter, as "secondary."

For these examples, it is natural to use dual rates -- one for primary and one for secondary use. The fire pumper truck is emergency equipment -- justification for owning it is not in the least related to secondary uses. (The controlled-burn can be done with smaller equipment, some of which can be rented). Thus, a persuasive case exists for adopting an economist's "marginal cost" viewpoint -- treating secondary uses as "extra," charging only enough to recover operating costs.

In the second example, a valid argument can be made for charging two different rates, one for each project, the "primary" use bearing the lower charge.

Which measure of benefit is appropriate depends on the equipment and circumstances -- for fire pumpers adopting "primary" use as a measure seems natural enough, whereas for

sedans (with relatively constant efficiency on any task) either the length of time assigned or miles operated seems a more natural measure.

Prorating Charges

Putting any measure of benefits to use requires a scale of relative values so that costs can be prorated among appropriations. The scale currently used in the Forest Service is a straight line relationship between miles operated and total costs -- the rate is region-wide and is pegged to forecasts of miles and total costs per class of equipment. (An advantage of this scheme is the ease of justifying reimbursement for FFF activities.) Establishing a scale for "primary" vs. secondary use presents the most difficulty.

Fixed costs such as management salaries can be prorated according to one of the following criteria, for each class of equipment:

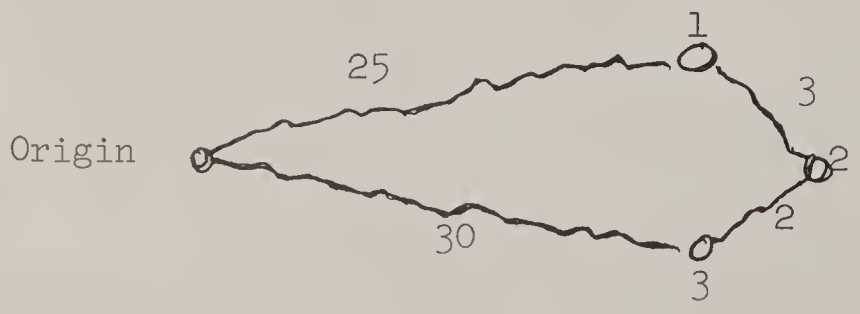
- operating costs
- maintenance costs
- total usage (miles/hours)
- proportion of time the person spends on each class

If usage is used, it may be either forecasted or actual usage -- if forecasting is used, rates may be updated during the year. When actual usage is used as the basis for prorating, the shorter the time period the more accurate the charges.

Any rate scheme is made up of either a Use Rate, a Time Rate

or some combination of both such as the "Minimum" or Use Rate plus Time Rate.

Actual usage is presently used in the Forest Service; therefore, in what follows, we will take a sharp look at how to prorate charges to different projects under two distinctive types of charges, namely the Use Rate and the Time Rate. The built-in scale (mileage) of a Use Rate has flaws -- it is an imperfect scheme for prorating charges to different tasks. An example will illustrate this. The numbers in the sketch below show the mileages between projects. Suppose one visits all three projects during one visit. Then deciding how much to charge each project depends on: 1) what you regard as principal and secondary destinations; 2) the route; and 3) what you consider fair and reasonable. If one easily decides how to prorate usage charges with a Use Rate then one can also decide just as easily under a Time Rate. If mileage is a natural scale for measuring benefits under a Use Rate it can also be used for a Time Rate -- because it is recorded in any event.



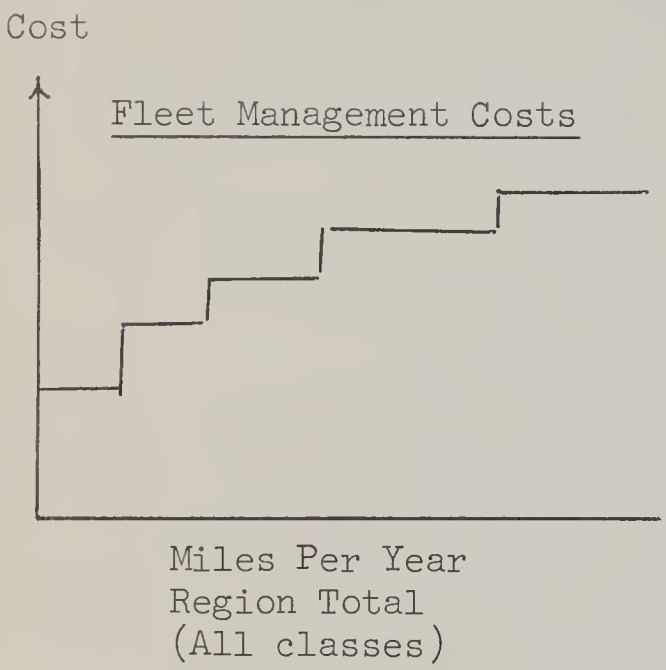
However, the Time Rate has one disadvantage: the difficulty in prorating charges during periods of idleness. When some equipment remains idle for months during the winter time, especially in mountainous terrain, how does one prorate a Time charge for such non-use? Several suggestions are as follows:

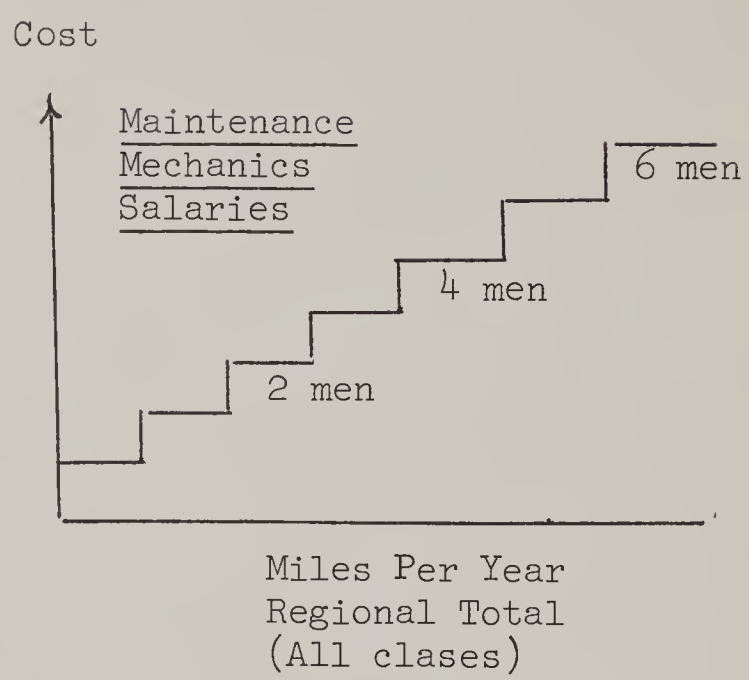
1) prorate charge based on last year's usage (assume the length of idleness is the same for both years).
2) using last year as a guide, forecast idle periods and use a time rate only for periods in which equipment is actually used, disregarding the "idle" months.
3) forecast usage for this year and prorate costs over idle months accordingly.

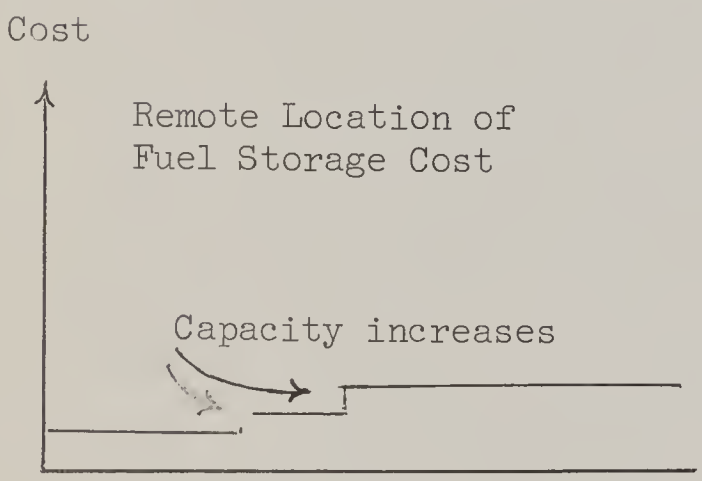
Fixed and Variable Costs

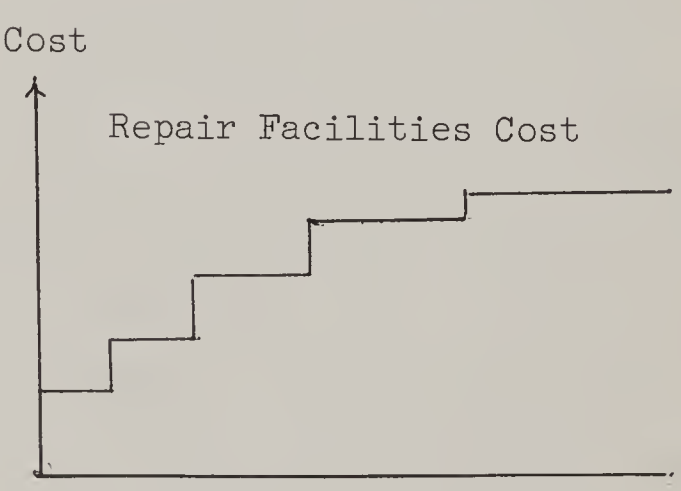
Fixed costs are independent of usage; variable costs are related to equipment usage. This is an over simplification, convenient for general discussions. The only truly fixed costs are independent of both usage and fleet size. For example, a gasoline storage tank and pump at a remote location is a necessity regardless of the number of vehicles using it or of their mileage. But, the amount of its storage capacity may depend on usage. Likewise, repair shop facilities depend more on the number of mechanics than on mileage. The number of clerical and managerial personnel depends on fleet size, age, composition, intensity of management, as well as on fleet usage. These and many other maintenance,

overhead and management costs "jump" at certain places as the following usage graphs illustrate.









In the light of the foregoing, it should be clear that no costs are truly fixed over the entire range of mileage. However, many

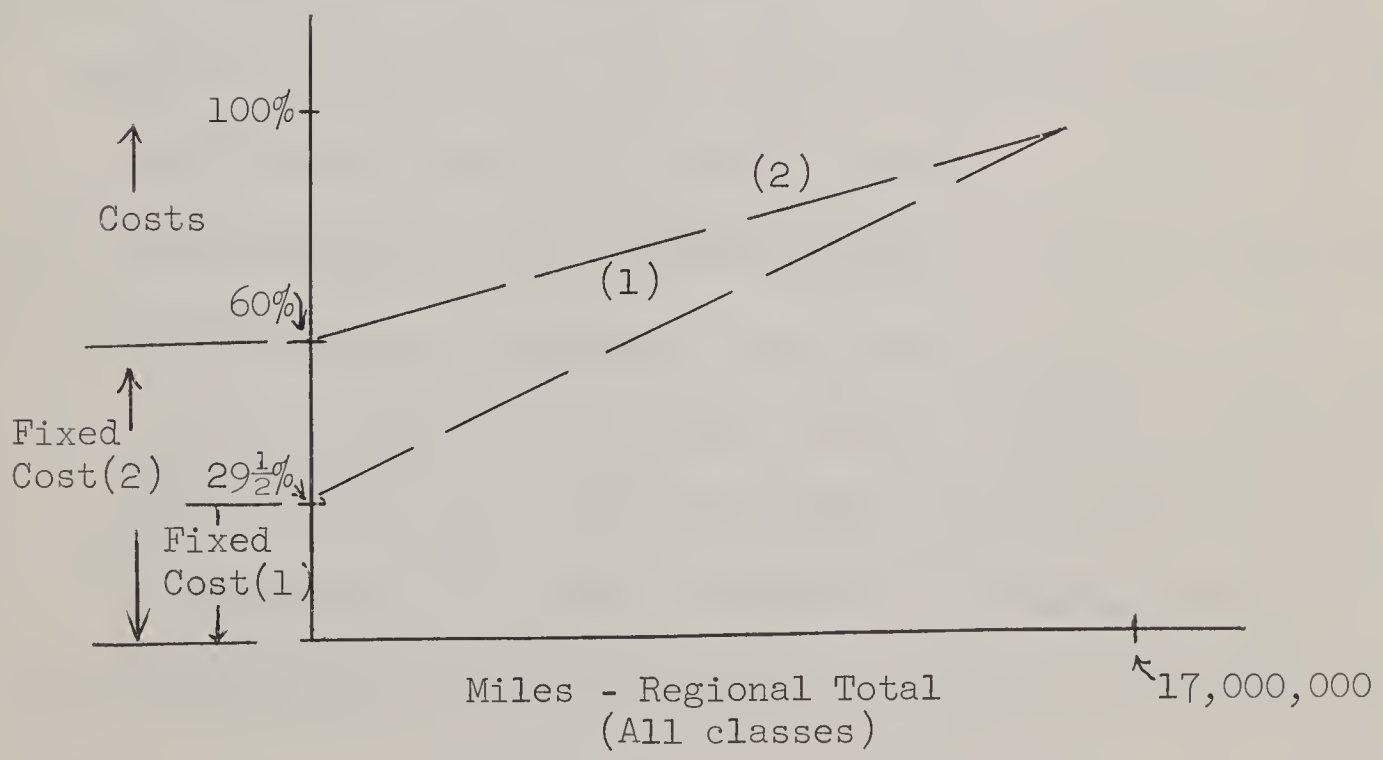
costs are fixed over a limited range of mileage -- within a very narrow range we can consider gasoline consumed, and wear and tear caused by usage, as the only variable costs. Recent cost studies, done in connection with GSA vehicle pooling proposals, performed by several regional fleet equipment managers, clearly indicate the fixed or variable nature of most costs for the current ranges of usages.

An Example of Fixed and Variable Costs

Under two different assumptions of what is regarded as fixed costs, we used Region 5 values (all classes) to produce the following graphs. Dollar values are in units of 100,000.

Operation	$ 8.75	30%
Maintenance	$11.17	41½%
Depreciation	$ 6.70	24%
Overhead	$ .39	1½%
Management	$ 1.20	4%
	$28.20	100%

Total Miles: 17,042,969



- Curve (1) assumes depreciation, overhead and management is fixed; operations and maintenance is variable.
- Curve (2) assumes all operations, but only 25% of maintenance is variable with the remainder being fixed (e.g., mechanics' salaries and other "system" costs are fixed).

Either assumption may be justified as the only correct one.

Another way of looking at costs is through the eyes of economists who effectively use the ideas of "marginal" costs -- the "extra" costs of adding one additional unit. For instance, choose a region at random and add one vehicle to its fleet -- no additional mechanics or other personnel are hired, nor are physical facilities increased. However, we do incur some additional costs resulting from adding the vehicle. But, among these, the only costs which are certain to increase exactly in proportion to mileage (i.e. linearly) are operating costs (fuel, tires, etc.). Some maintenance, management and overhead costs increase only slightly with large additions to the overall mileage. Thus, a decision maker could argue persuasively, that when comparing costs of renting a vehicle with owning a vehicle, he need not consider management, overhead and fixed facility costs -- only operations and part of the maintenance costs. Accepting this leads us to the following conclusion: In making investment decisions (including comparing Forest Service costs with GSA costs) there is good reason for treating some items as "system" costs which result from operating and managing the "fleet" -- they are insensitive to individual rent-or-buy decisions and may be omitted from considerations.

Subsequently, we show that to minimize forecasting errors requires that reimbursements be directly proportional (and coincide with) "true" costs, fixed and variable. Such reimbursement must contain two parts -- a fixed charge to account for fixed costs and a mileage charge to account for variable costs. But, to distinguish between fixed and variable costs you must assume that usage is restricted to some narrow range (miles or hours) in order to identify which costs remain fixed and, also, you must assume you wish to make some kind of a decision. For example, when comparing renting vs. owning one additional piece of equipment, you can assume either of two attitudes:

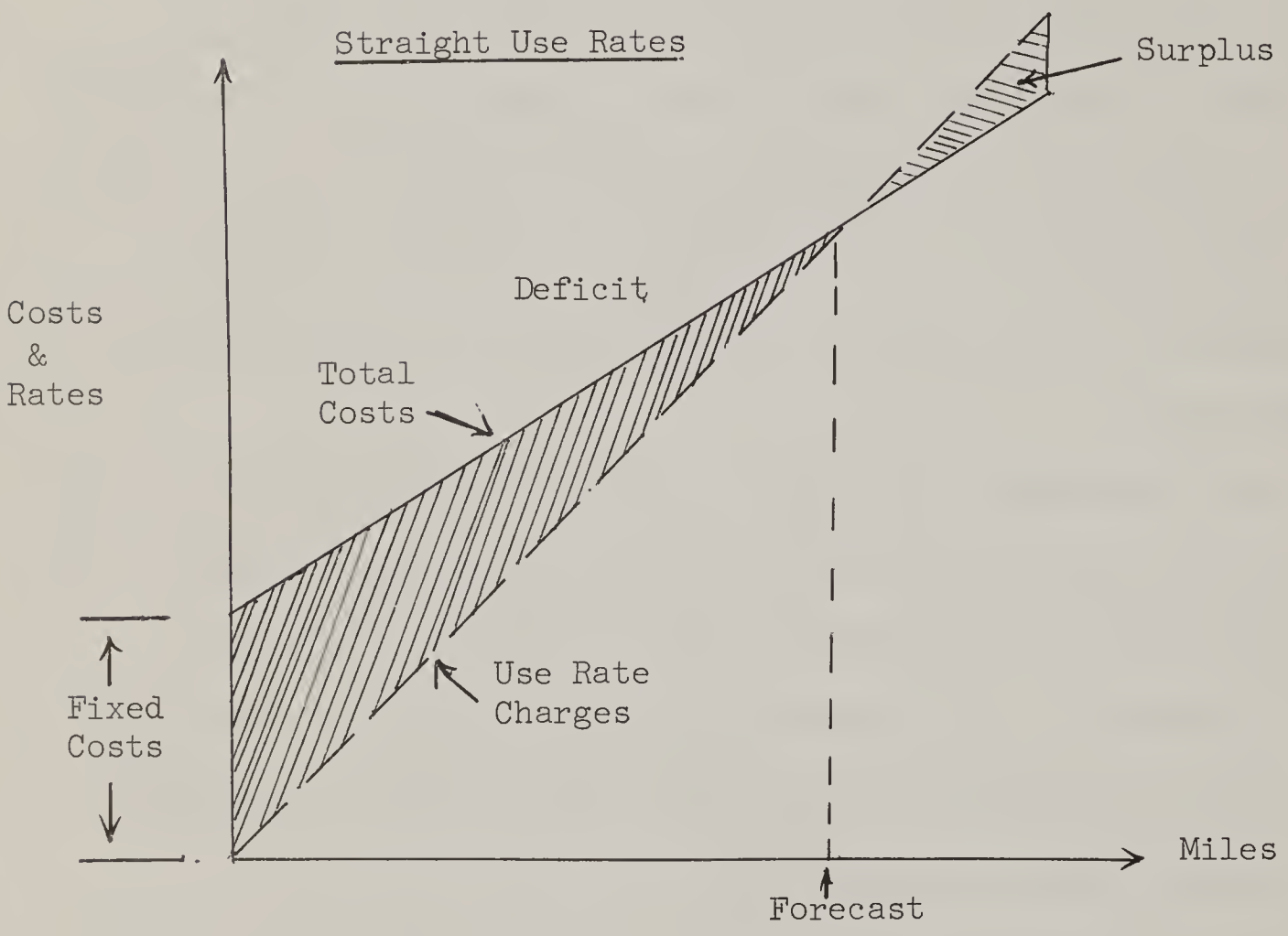
- most management and overhead costs, and some maintenance costs will be the same whether we acquire this extra equipment or not; and they can be regarded as part of the entire "system," unrelated to the investment decision being made. Therefore, this extra equipment should bear only the extra costs which result from its acquisition,
- or, the equipment should bear its prorata share of the fixed management and overhead costs.

Sensitivity of Rates to Forecasting Errors

1. Use Rate

The straight "Use Rate" of the present WCF is highly sensitive to errors in forecasting costs, hours and miles of use. This means the rates must be adjusted frequently (e.g. mid year) and pegged sufficiently high to cover costs in the event of

lower than expected use. See graph below for a comparison of actual costs and present "Use Rate" reimbursements.

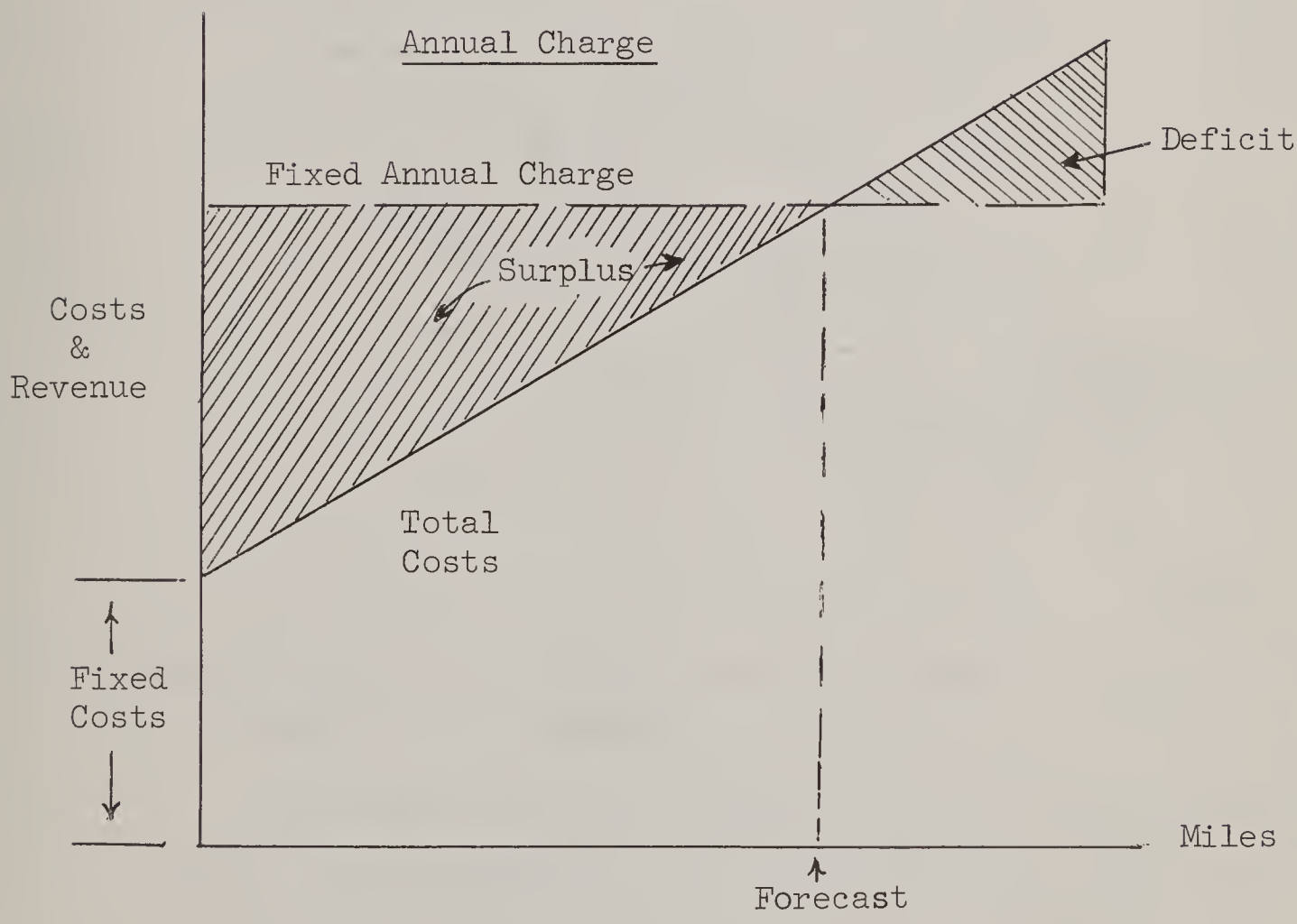


2. Fixed Charge Collected Annually

Based on a forecast of mileage, each user is charged a fixed amount (e.g. per year) regardless of mileage.

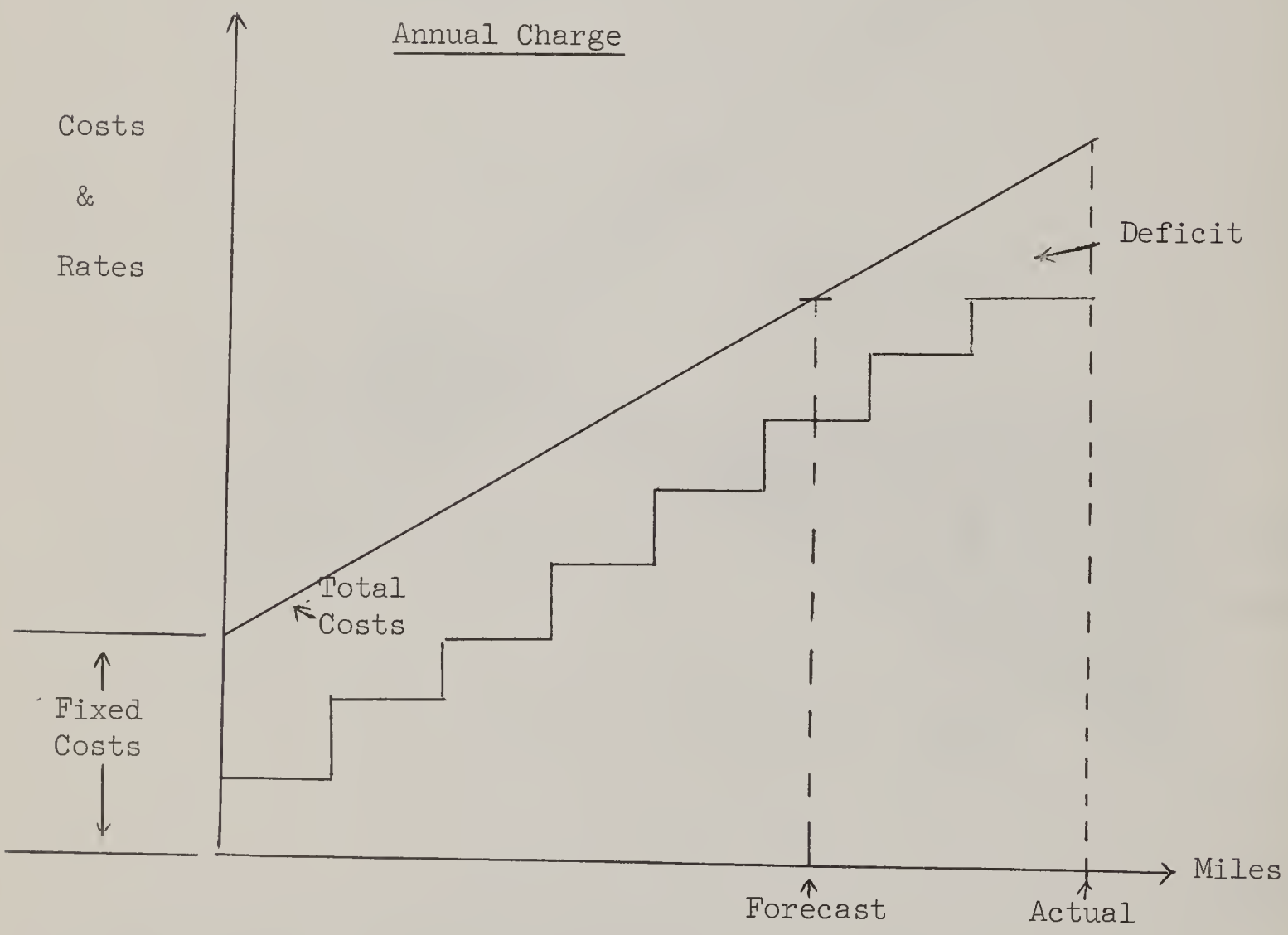
The forecasting errors are similar, but opposite in sign to a pure use rate.

The "scale" for measuring benefits to the user is not imbedded with the rate structure except under perfect forecasting of both miles and costs; otherwise year end adjustments are required.



3. Fixed Annual Charge Collected Periodically (Time Rate)

This is the same as the previous scheme except the charge is collected periodically, say monthly or weekly, rather than once each year.



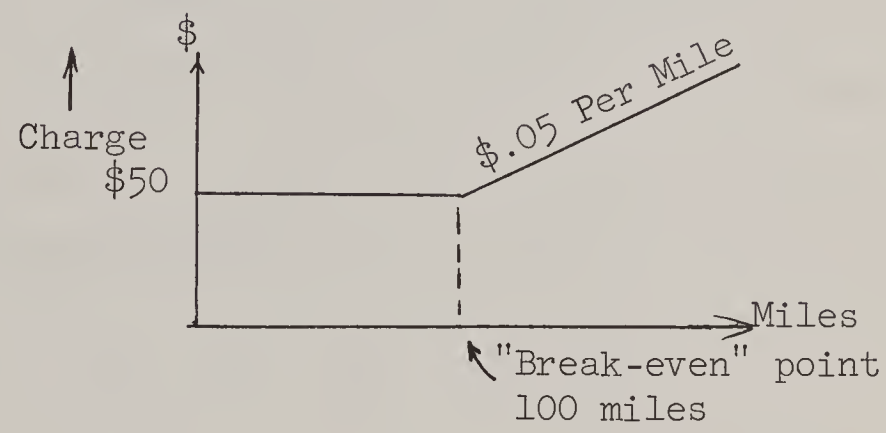
4. Minimum

User pays either:

1) A time rate, or

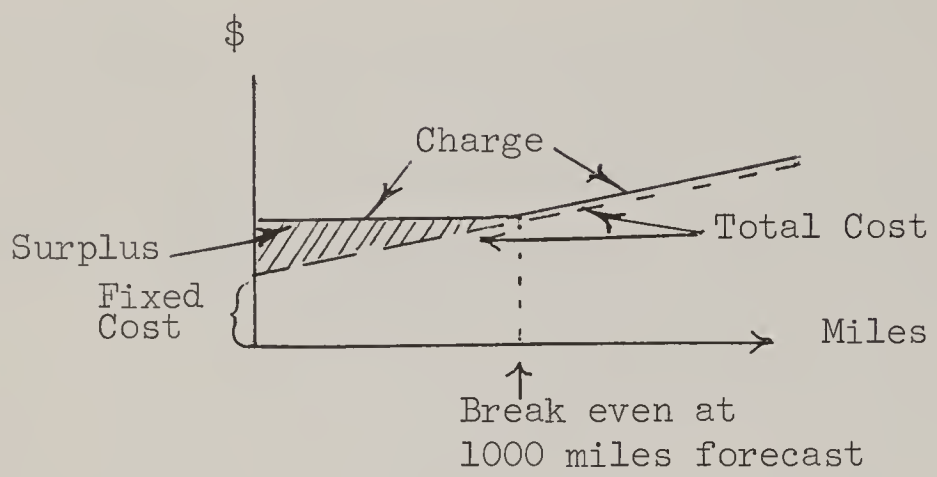
2) A use rate.

Whenever usage per period is less than a "break-even" value, he pays a time rate; otherwise, he pays a use rate. The "break-even" mileage is usually the same for all periods. Following is a graph of what a typical user sees each month.

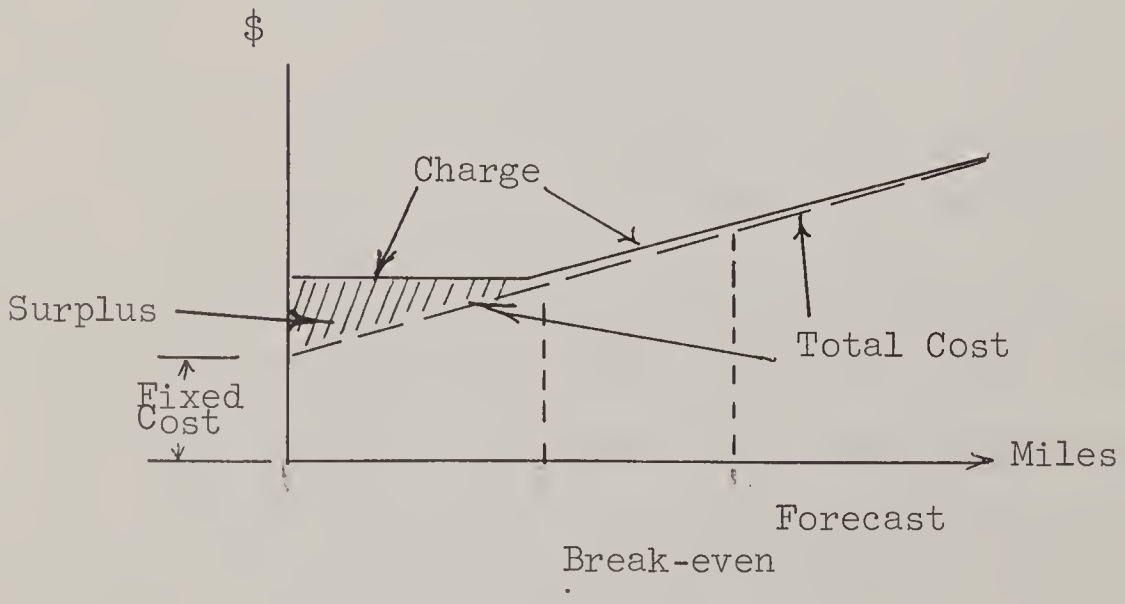


The charge is $50 per month or $.05 per mile, whichever is larger. The break-even point is 1,000 miles. How were these values determined? There are several ways, and all are sensitive to error in forecasting miles. The most natural way is for the break-even mileage to coincide with forecasted usage and the

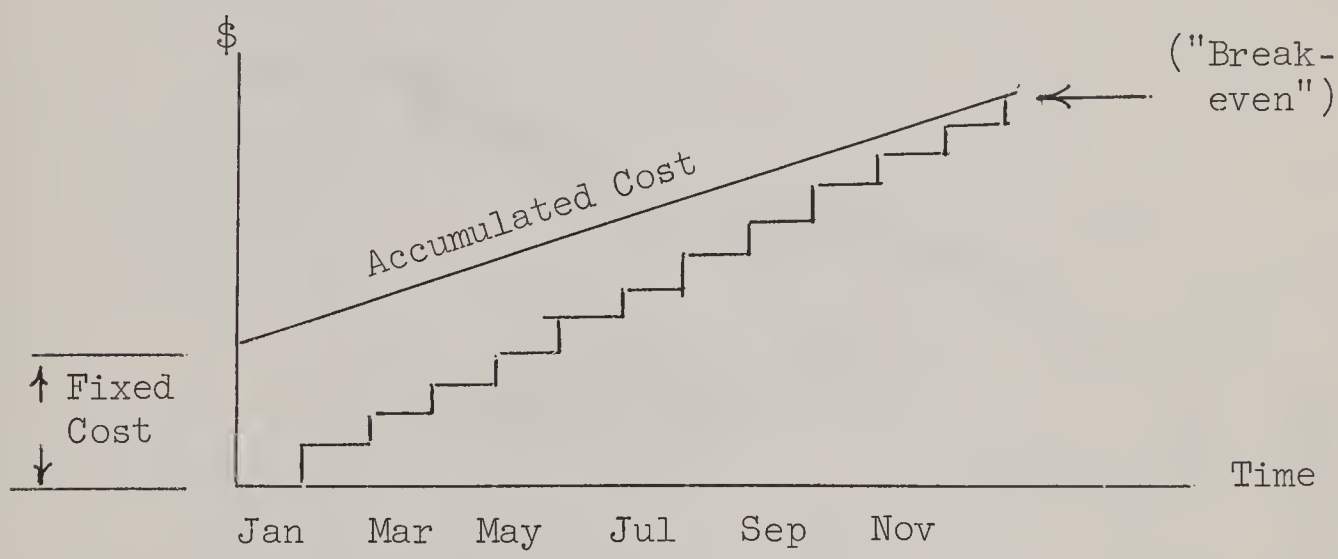
mileage rate to coincide with variable costs. The following graph shows these relationships.



An error in forecasting produces no deficit. But the surplus, resulting from over estimating use, may be kept small by shifting the break-even point to the left, i.e. less than forecasted use. This condition appears on the following graph.

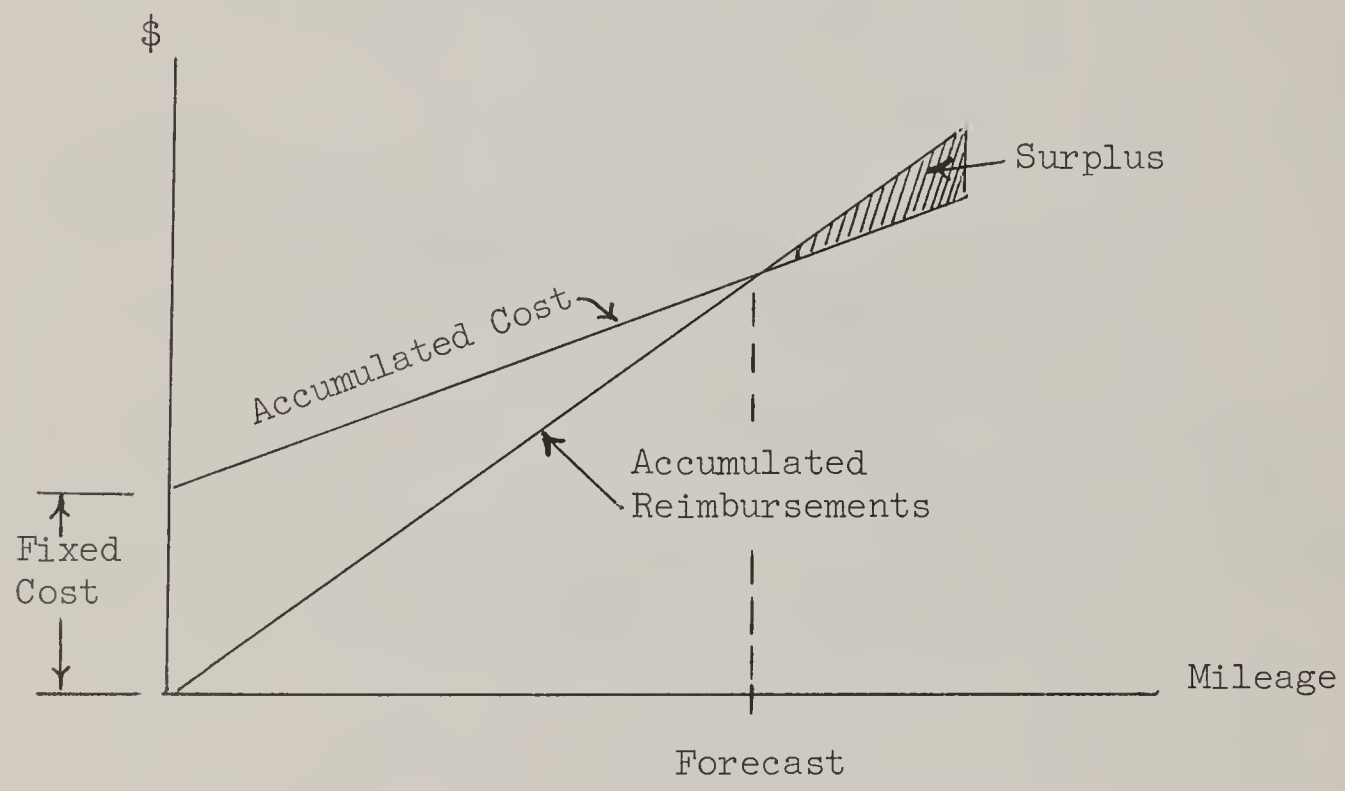


To illustrate, in a simple way the sensitivity of this scheme to forecasting errors, let us "peg" the reimbursement rate and the "break-even" mileage to recover our costs (no more, no less). The two parts of the monthly rate are found by dividing total annual costs by 12. The graph below shows how costs and reimbursements accumulate over the year for this scheme with the same mileage per month.



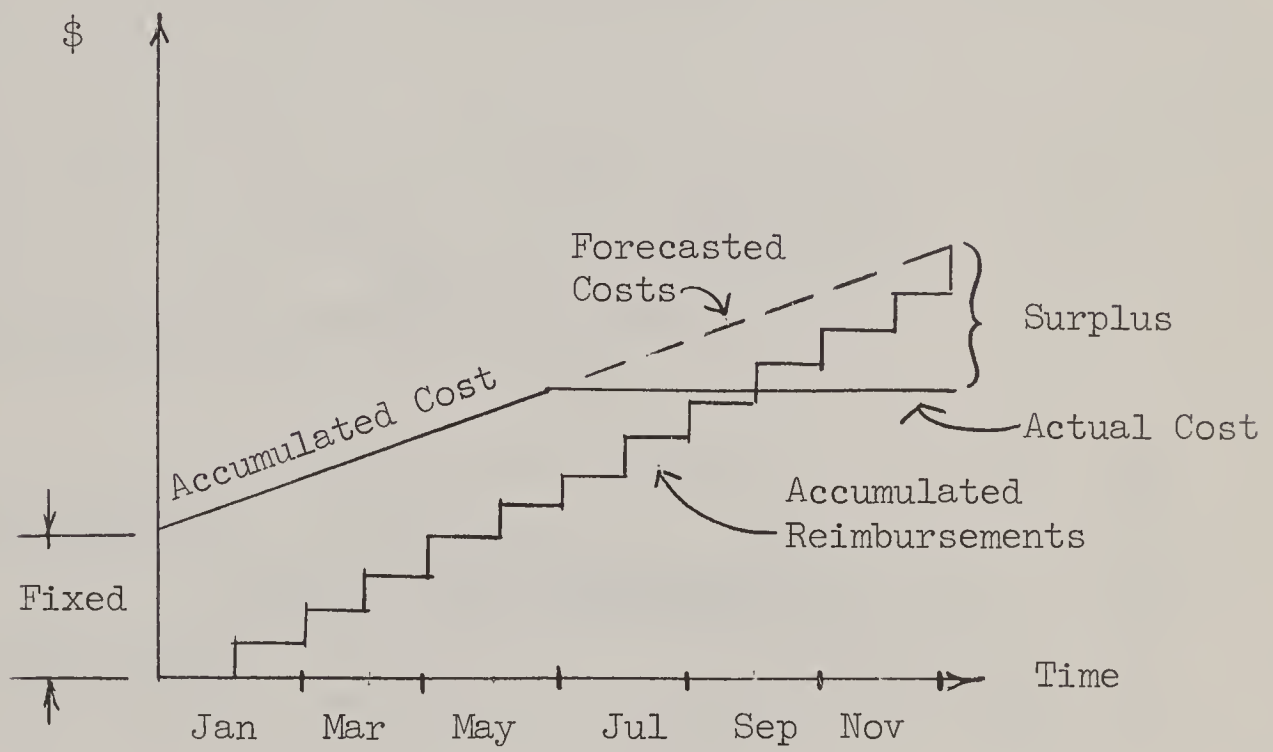
We see that whenever usage is less than "break-even," some surplus is bound to result because actual cumulative costs will be less than reimbursements. This is true, no matter when it happens, for any month of the year.

The situation is different with the opposite kind of forecasting error, namely, excess mileage. To illustrate, assume 20% more than "break-even" usage uniformly for each month of the year. Fixed costs remain the same, but assume variable costs increase by 20%. The graph below shows dollars vs. <u>miles</u> (rather than dollars vs. time, as before).



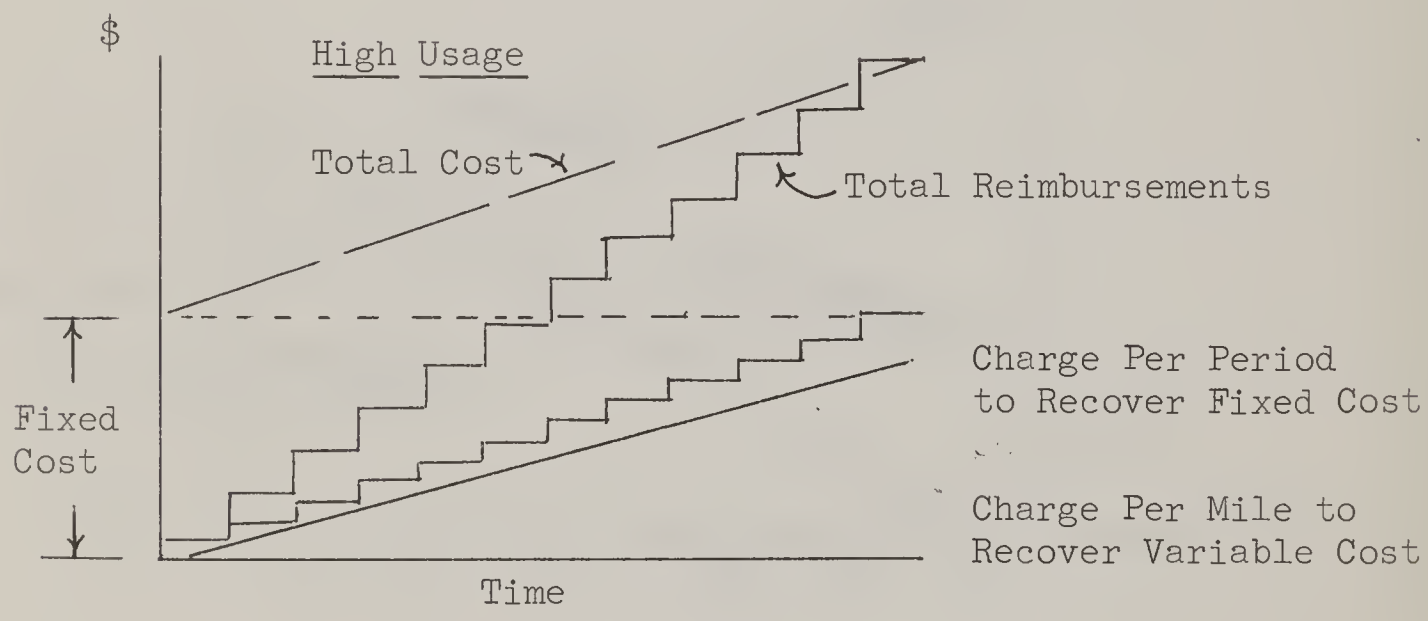
To complete this discussion, we mention briefly a combination of usage -- low usage followed by excess usage. The result is again a surplus.

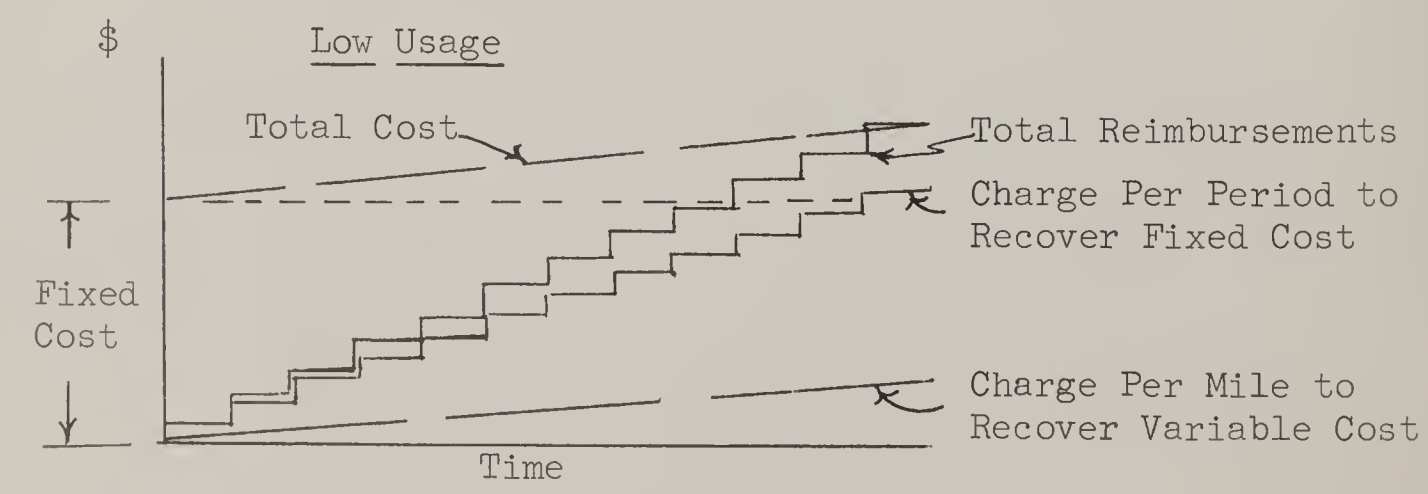
So far, we are in good shape. Let's keep the same reimbursement rate for the next year. This time, however, his mileage drops to almost nothing for the last six months, resulting in almost no variable costs. The graph below shows how we accumulate a surplus.



5. Charge Per Period Plus Charge Per Mile (Time Rate Plus Use Rate)

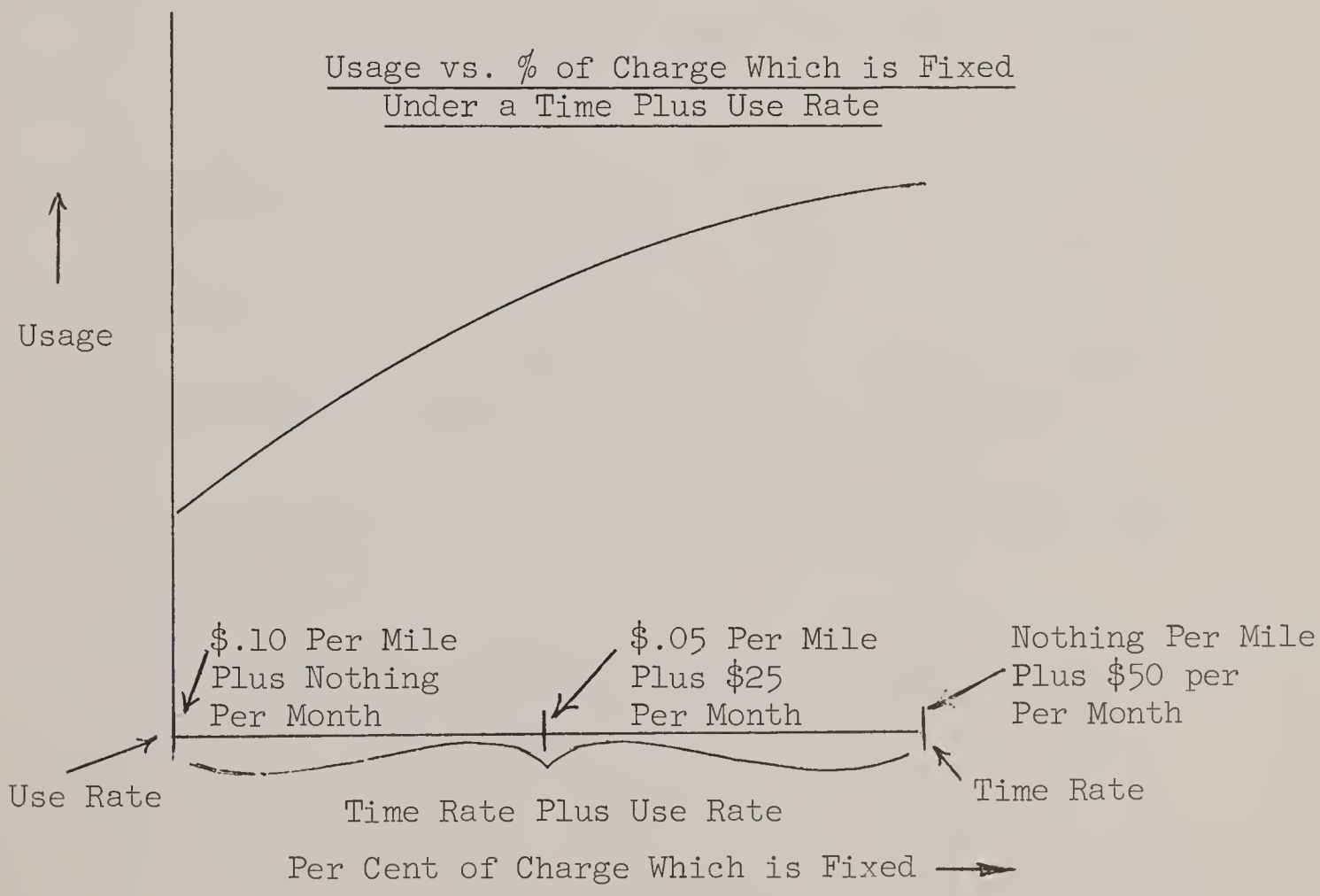
The user pays two charges: one is a fixed charge per period (Time Rate) for recovering fixed costs; the other is a charge per mile (Use Rate) for recovering variable usage costs. This scheme is the least sensitive to errors in forecosting. In the graphs which follow, both extremes are shown -- higher and lower than expected usage. Uniform usage per period is assumed for both. Note that $ are plotted against time rather than miles as we did previously.





Effects of Rates on Usage and Ownership Decisions

Rates can either encourage or discourage usage. Changing from one rate scheme to another is likely to result in changes in usage, as well as changes in decisions to acquire or replace equipment. The following graph indicates how usage (for a given user) is likely to increase as his rate gradually shifts from a pure charge per mile to the other extreme of a single fixed charge per period. The graph shows what happens to usage with a Time Plus Use Rate scheme. The fixed part of the charge is allowed to change: when it is nothing, we have a pure Use Rate; on the other hand, when it is everything, we have a pure Time Rate; in between, we call it a Time Plus Use Rate. (Note the omission of a scale of values!) This striking phenomenon was observed in Region 5 when a lower use rate, plus a "standby" rate was introduced for some fire equipment.



One likely result of a change over from a pure use rate, is that accuracy of forecasts of usage may suffer until usage patterns again become stable.

How is ownership affected? Under a uniform charge for all users, changing to some form of time rate from a Use Rate puts a cost "squeeze" on low intensity users who are "subsidized" under a Use Rate. If the Time Rate is sufficiently high, they may decide to rent vehicles during peak periods rather than own them.

Summary

Following is a summary of how well each rate scheme satisfies the criteria we have discussed. (A statement of each criterion is underlined.)

1. Reimburse according to benefits received from the availability or use of equipment, whichever is most appropriate. The Use Rate is not suitable for accounting for benefits received from availability. A Time Rate is not suitable for accounting for benefits received from the use of equipment. However, there are two schemes which will account for both use and availability -- they are the "minimum" charge scheme and the combined Time plus Use Rate.

2. Field management decisions should coincide with the best interests of the Government -- minimize total costs.

3. Rates should encourage optimal management decisions to acquire, use or replace equipment.

To satisfy both of the above criteria, we need a rate scheme in which a field manager's costs are the same as the Government's costs. We have already discussed how neither the Time Rate, nor Use Rate, is satisfactory. Since a "Minimum" charge produces surpluses and deficits from forecasting errors, a Forest's costs are not the same as the Government's. Under a Time plus Use Rate, the Forest's costs will be nearly the same as the Government's costs -- they would be the same as the Government's costs for forest-wide rates, but not for region-wide rates.

4. Minimize errors in forecasting of usage and costs. Only the combined Time plus Use Rate satisfies this criterion.

5. Rates should not discriminate in favor of low intensity equipment users. The combined Time plus Use Rate satisfies this criterion in some measure because a non-discriminatory rate must closely coincide with costs (both fixed and variable) -- however, region-wide rates still discriminate even under this scheme.

6. The methods for pro-rating charges to appropriations should be convenient. The Use Rate presently used is convenient, especially for equipment, such as pickups and sedans, which are

often used on different tasks. However, it is not accurate, especially for pro-rating fixed costs such as management, overhead and other "system" costs. Such costs should be pro-rated by formula; and usage is probably not a good measure of the managerial efforts required by each class of equipment. A workload analysis of how fleet management and other fleet overhead personnel spend their time would provide a better basis for pro-rating.

7. Rate should provide the widest range of control over usage -- from maximum stimulus to maximum suppression. Only the Time plus Use Rate satisfies this criterion.

In the following chart entitled "COMPARISON OF HOW RATES SATISFY CRITERIA" rate schemes are listed across the top. The criteria, listed down the side, includes an additional item: "minimum cost to administer." This was added for the sake of completeness, even though it was not part of the analysis.

COMPARISON OF HOW RATES SATISFY CRITERIA

CRITERIA	Time	Use	Mini-mum	Time Plus Use	Dual			Individual Forest Rate: Time Plus Use
					Primary-Secondary	Surcharge on Rentals	Standby	
1. Reimburse according to:								
a. Benefits from use	-	+	+	+			+	+
b. Benefits from availability	+	-	+	+			+	+
c. Primary use benefits					+			
2. Field decisions coincide with best interests of the Government (field unit's costs same as Gov't's costs).								
a. Using available equipment	-	-	+	+	+		+	+
b. Using rentals more intensively	-	-	+	+	+	+		+
c. Rent or buy decisions	-	-	-	+	+	+		+
d. Contracting the entire job	-	-		+	+			+
3. Rate should neither encourage nor discourage managers from acquiring, using or replacing equipment.	-	-	+	+				+
4. Minimize errors in forecasting usage and costs.	-	-	-	+	-		-	+
5. Rates should not discriminate in favor of low (high) intensity users.	-	-	-	+				+
6. Pro-rating charges to appropriations should be convenient								
a. For usage	+	+	+	+	+	+	+	+
b. For idleness	-	+	-	-	-	-	+	-
7. Maximum range of control over usage -- stimulate or suppress.	-	-	+	+				+
8. Minimum cost to administer.					-	-		-